

# **Rhizo-Creation of Second-Language Teachers' Capacity for Technological Integration**

## **Rhizo-Création de la capacité d'intégration technologique des enseignant.e.s de langue seconde**

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Article abstract

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## **Rhizo-Creation of Second-Language Teachers' Capacity for Technological Integration**

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*Francis Bangou, University of Ottawa, Canada*

#### **Abstract**

This article puts to use the work of Deleuze and Guattari to build new knowledge and understanding associated with the circumstantial nature of becoming a technology-capable language teacher through experimentations with/in the agencements of an ongoing research project associated with the design and delivery of a 12-week online graduate course in computer-assisted language learning (CALL). Methodologically, data collection encompassed participants' assignments, semi-structured interviews, course materials, and researcher's journal. Moreover, rhizoanalysis was deployed to map change and potentialities in teachers' becoming. Scholarly contributions to the fields of technology, learning, and teacher education relate to re-theorizing the role and effect of human, expressive, and material elements in teacher education in CALL, as well as developing new methodologies to research micro-level singularities and emergent potentialities for teaching and learning with/in teacher education.

*Keywords:* Language education; Technology; Teacher education; Deleuze; Rhizoanalysis

#### **Résumé**

Cet article met à profit le travail de Deleuze et Guattari pour produire de nouvelles connaissances et compréhensions sur la nature circonstancielle du devenir enseignant.e de langue capable d'utiliser les technologies en expérimentant avec / dans les agencements d'un projet de recherche en cours associé à la conception et à la prestation d'un cours de deuxième et troisième cycle en ligne de 12 semaines sur l'Apprentissage des langues assisté par ordinateur (ALAO). Sur le plan méthodologique, la collecte de données comprenait les devoirs des participant.e.s, des entrevues semi-structurées, le matériel de cours et le journal du chercheur. De plus, la rhizoanalyse a été déployée pour cartographier les changements et les potentialités du devenir enseignant.e.s. Les contributions savantes aux domaines de la technologie, de l'apprentissage et de la formation du personnel enseignant se rapportent à la ré-théorisation du rôle et de l'effet des éléments humains, expressifs et matériels dans la

formation du personnel enseignant à l'ALAO, ainsi qu'au développement de nouvelles méthodologies pour rechercher les singularités de micro-niveau et les potentialités émergentes pour l'enseignement et l'apprentissage avec / dans la formation du personnel enseignant.

*Mots-clés* : L'Enseignement des langues ; La technologie ; Formation des enseignant.e.s ; Deleuze ; Rhizoanalyse

### Entry Point

Throughout the years, numerous epistemologies and methodologies have been used to try to capture the process and outcomes of teacher education in computer-assisted language learning (TEDCALL) (Hubbard, 2019; Kessler & Hubbard, 2017; Sun & Zou, 2022). What emerges in part from these inquiries is that teacher development in computer-assisted language learning (CALL) is a complex and situated process (Arnold & Ducate, 2015; Son & Windeatt, 2017). As such, Arnold and Ducate (2015) have argued for more research to “help us identify ways in which CALL teacher education can successfully account for the context-specific nature of teaching and learning” (p. 6).

This article draws on the work of Deleuze and Guattari (1987) to think about and do TEDCALL differently through experimentations with/in rhizomatic transformative interconnections amid human, material, and expressive elements associated with the process of becoming a technologically capable second language (L2) teacher. Methodologically, rhizoanalysis (Masny, 2016) was deployed to map change and potentialities in pre-service teachers becoming with/in the *agencements*<sup>1</sup> (“assemblage,” in English; Deleuze & Guattari, 1987) of an ongoing research project associated with the design and delivery of a 12-week TEDCALL online graduate course.

This article also relates to recommendations by Hubbard (2019) and Zhang (2022) to prepare pre- and in-service L2 teachers to engage with change, as technological innovations are constantly reconfiguring L2 teaching and learning practices. This article puts forth the idea that Deleuze and Guattari's relational ontology of becoming can help achieve this goal, as it provides conceptual and methodological resources to think and work with/in intricate and ever-changing circumstances (Bangou & Vasilopoulos, 2018).

### Theoretical Framework

In Deleuze and Guattari's (1987) view, reality is an emergent production of constant interplays between three realms: the virtual, the intensive, and the actual (Figure 1). The virtual realm is situated beyond human consciousness and is the plane where structures and categorizations are flattened, and where *potentials to become* exist—potentials that constantly fold, unfold, and refold into perceptible

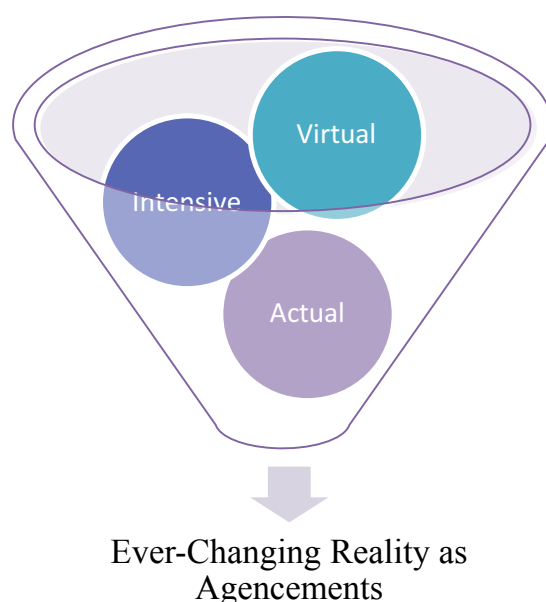
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<sup>1</sup>In this paper, the original term “agencement” will be used, because the word “assemblage” does not fully communicate the unpredictability and consistent reinvention that is central to the concept of “agencement.” See Bangou (2014) and Buchanan (2017).

expressions in the actual realm (i.e., in the tangible reality). The intensive realm, located between the actual and the virtual, encompasses the productive capacities, resonances, forces, flows, and connections that continuously and differently contribute to the actualizations of potentials to become (Bangou, 2020). Both the virtual and intensive realms are immanent to the actual and, as such, are as real as what is perceived—and what is perceived as being real, in short, are the expressions of potentials to become.

**Figure 1**

*Unfolding of Reality*



Thus, *becoming* refers to ongoing, singular, and unpredictable transformations of potentials that cannot be reproduced. As such,

To become is never to imitate, not to “do like,” nor to conform to a model . . . There is no terminus from which you set out, none which you arrive at or which you ought to arrive at . . . [f]or as someone becomes, what he is becoming changes as much as he does himself. (Deleuze & Parnet, 1987, p. 20)

Becoming occurs with/in agencements, which refer to the way heterogeneous elements connect immanently to co-produce something new (Bangou & Vasilopoulos, 2018). In terms of composition, agencements consist of expressions (i.e., regimes of signs) and content (i.e., entities), as well as intermingling forces of territorialization (i.e., stabilization), deterritorialization (i.e., destabilization), and reterritorialization (i.e., restabilization) (Deleuze & Guattari, 1987). Desire, then, is an intensive force that can potentially destabilize agencements and contribute to the co-production of something new. For instance, a teacher’s desire to use a new technological resource is always connected with other elements, such as their career. With/in these desiring agencements, the new technology may become a resource to impress a colleague or to secure a promotion that might be under threat (i.e., the

content). These connections between technology-career-promotion-threat in the intensive may actualize as the adoption or rejection of the technology (i.e., sign), depending on the intensity (i.e., strength of effect) of each connection (i.e., force).

Agencements are therefore bounded by ever-changing mutable connections occurring in the intensive and, as such, are themselves in constant variation (Bangou, 2014). What matters, then, is to experiment with the transformative capacities of elements with/in agencements, and with what these capacities might become, and with how they are validated (Buchanan, 2017).

According to Deleuze and Guattari (1987), relationality with/in agencements is foremost rhizomatic (i.e., disruptive, alogical, non-linear, and multiple, and with no order, no hierarchy, no beginning, and no end)—including relationality between content and expression in that there is neither correspondence nor conformity between the two elements. In other words, the relationship between one's refusal to use a technological tool and one's willingness to use technology cannot be reduced to a straightforward and logical signifying correspondence (i.e., meaning), but rather to the ways in which sense emerges out of non-sense and functions with/in rhizomatic relations of “resonation, interference, amplification, and dampening” (Massumi, 1996, p. 219) associated with the desiring agencements produced when teachers and technology collide. Sense, then, lies at the intersection of content and expression, emerging when entities and regimes of signs come together rhizomatically and intensively (Deleuze, 1990). Therefore, a relational ontology of becoming is more preoccupied by experimentations the transformative and destabilizing capacities of nonsense than by the discovery of meaning.

Learning, then, occurs with/in the process of becoming, and encounters with non-sensical expressions of reality. In that regard, non-sense becomes a thought-producing problem that could lead learners and learning down unexpected and transformative paths dependent on the forces at play at specific times and in specific spaces. For instance, some readers may have trouble making sense of this article, as they may not be familiar with Deleuzo-Guattarian inquiries. As a result, this agencement of readers—article—learning may result rhizomatically in the emergence of thoughts and connections with other elements (e.g., intense feelings of uneasiness, etc.). These unpredictable (and potentially disruptive) emerging connections might then lead the agencement of readers—article—learning down a transformative path. For instance, the desire to find out more about Deleuzo-Guattarian research or anything else could emerge. That is why what could constitute evidence of learning remains uncertain, as “we never know in advance how someone will learn: by means of what loves someone becomes good at Latin, what encounters make them a philosopher, or in what dictionaries they learn to think” (Deleuze, 1994, p. 165). Hence,

we learn nothing from those who say: “Do as I do.” Our only teachers are those who tell us to “do with me”, and are able to emit signs to be developed in heterogeneity rather than propose gestures for us to reproduce. (Deleuze, 1994, p. 23)

Consequently, the role of teachers is not to scaffold learning to ensure that learners reproduce a pre-established notion of a desired outcome, but rather to provide a space for learners to discover

thought-producing problems (Bogue, 2013) and experiment the transformative capacities of their learning agencements (Bangou, 2020).

Learning how to integrate digital technologies into a language classroom, then, is not equal to an act of mimicking (e.g., being or acting like) a performance indicator; rather, it is a rhizo-creation of nothing else other than itself, as affected by intensive connections between tangible and intangible human, material, and expressive elements.

### **Teacher Becoming in CALL**

In light of the above framework, teacher becoming in CALL (TBIC) (Bangou & Vasilopoulos, 2018) has been put forward to think and do TEDCALL differently. TBIC focuses on the act of transforming tangible and intangible elements of the world with/in the agencements associated with research and TEDCALL. As elements of the agencements themselves, teachers, teacher educators, students, and researchers all contribute to the emergence of TBIC—and can all potentially be transformed by any other elements, be they human, material, or expressive. As such, only through experimentation can teachers, teacher educators, researchers, and students get a sense of all the possibilities that CALL offers with/in their agencements (Bangou & Vasilopoulos, 2018).

Teacher becoming in CALL is well equipped to engage with transformation and change (as opposed to reproduction and stability) in teaching and learning, as change and difference (not repetition and sameness) become the points of reference. TBIC also provides a space to account for the context-specific nature of teaching and learning. Indeed, TBIC disrupts the logic that if “the language, structures, organisation and administration of teacher education are established, then the right kind of pedagogical practices and desired forms of learning will somehow emanate from that” (Gale, 2007, p. 472).

### **Research Questions**

Drawing from the above theoretical framework, the following research questions will guide this article to experiment with TBIC’s capacity to transform and be transformed with/in teacher trainees’ becoming in CALL: With/in the agencements of the teacher trainees’ reflective multimedia collages and this article, (a) how do the concept of TBIC and learning to engage with change connect with other tangible, intangible, human, material, and expressive elements? (b) how do these connections transform the capacity to change and be changed of TBIC, learning to engage with change, and other tangible, intangible, human, material, and expressive elements? and (c) how are these transformations validated?

### **The Learning Space**

The learning space for this study emerged as a 12-week online graduate-level TEDCALL course. During this course, the teacher trainees (herein, the “students”) had the opportunity to

experiment with what they might become with/in CALL while navigating through five modules that focused on diverse topics associated with digital technologies integration in the language classroom (for more information, see Bangou & Vasilopoulos, 2018).

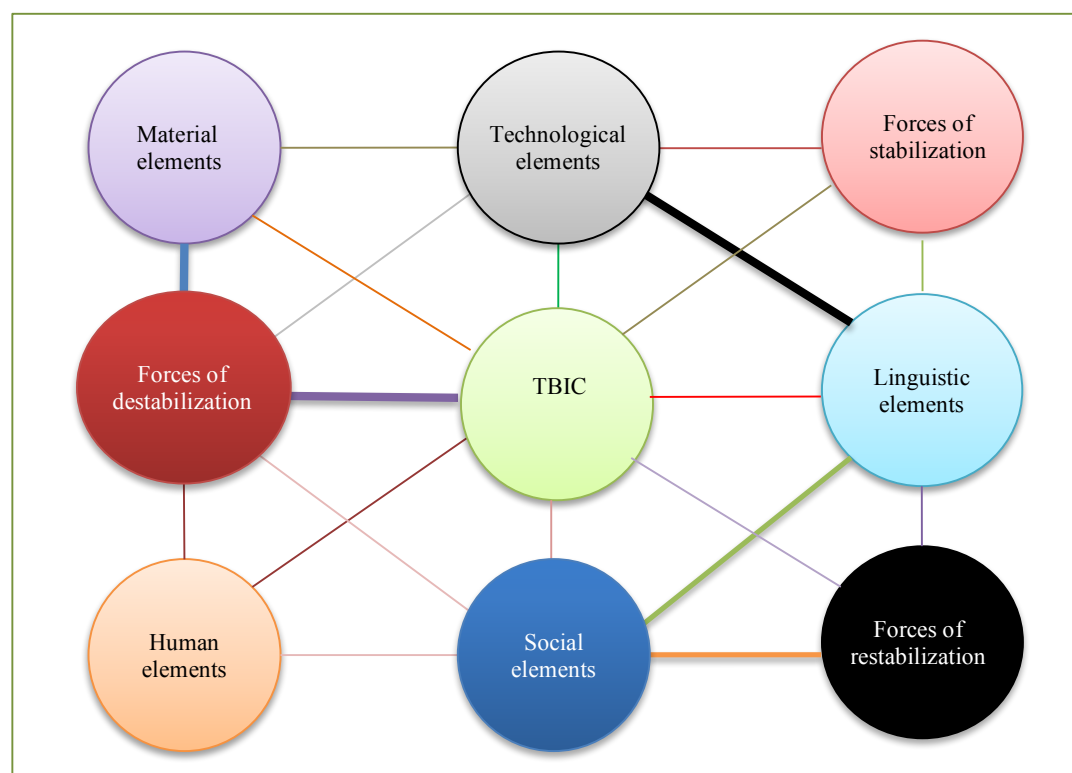
To experiment with/in their becoming in CALL, students could choose between two paths in the course curriculum. Both paths merged the principles of project-based, situated, and reflective learning—an approach that aligns with Guichon and Hauck’s (2011) recommendations to combine reflective and exploratory practices to help teachers gain understanding of the complexities associated with integrating digital technologies in the L2 classroom. One path was a community service learning (CSL) option. Students who selected this option volunteered with an educational institution or a community-based organization for a minimum of 30 hours and worked on a project pertaining to the integration of digital technologies in language education under the guidance of a community supervisor. To guide students’ experimentations, they were also required to maintain a blog and post weekly logs triggered by prompts provided by the instructor, inspired by TBIC, and readings from the course, such as “What connections can be made to technologies and languages?” The other path was the regular course option.<sup>2</sup> Students who chose this option spent the session working, in teams of two or three, on a technology-integration project based on an authentic or a fictional situation; they were also required to contribute, in their groups, to three discussions on an online forum, with each post offering reflective analysis about session readings and various TBIC-inspired prompts provided by the instructor (e.g., “Did something in the readings unsettle, disturb, or otherwise “get to” you? If so, what did that produce?”) (Bangou & Vasilopoulos, 2018).

More relevant to this article was the final assignment, in which all students had to work individually to design a reflective multimedia collage of their becoming in CALL. This assignment required them to engage with change by mapping the elements that contributed to their transformations throughout the session and by considering the potentiality of their becoming in CALL. A visual expression of TBIC (Figure 2) was available on the online platform to help students think *in* the singularity and creative potential of their becoming in CALL (Bangou, 2020). Students also had access to an audio recording that explained the visual expression of TBIC in more detail. Students were then asked to share their collages on an associated website that acts as an interactive platform to create new potentials for TEDCALL (Appendix A).

Figure 2 itself is an agencement with multiple points of entry (e.g., social elements, forces of destabilization, etc.) but with no beginning and no end. It is composed of intermingling material, technological, linguistic, social, and human elements along with forces of stabilization, destabilization, and restabilization. While elements of this agencement are situated at random, TBIC is centrally located to express that it is the concept that guides one’s thinking with/in pre- and in-service teachers’ becoming in CALL. Moreover, the various arbitrary colours and thicknesses of the connecting lines express that elements of the agencement never connect the same way twice (colour) and with the same intensity (thickness) (Bangou, 2020).

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<sup>2</sup> The Centre that coordinates the CSL program recommends this assignment be an optional component of a course. As such, students must also be provided with another optional path to meet the course requirements.

**Figure 2***A Visual Expression of Teachers Becoming in CALL*

To date, the course has been delivered multiple times; the present study's field material and findings stem from the second time this course was delivered.

## The Study

### Research Design and Method

Deleuzo-Guattarian-inspired research recognizes that scientific knowledge is produced with/in flows of transformative connections generated in part by the methodology and methods engaged (Fox & Alldred, 2015). To produce knowledge differently, “it is no longer what happened that matters so much, but rather what is happening now and what can happen next” (Vannini, 2015, p. 11). In this approach, researchers are no longer preoccupied by representation, description, and reporting. Rather, “it is enactment, rupture, and actualization that engage” their attention (Vannini, 2015, p. 11) to map the ways elements of an agencement resonate, amplify, disrupt, and diminish, and consider what these transformations may produce. To do this, research moves towards a decentring of the researcher as a subject. Instead, the researcher engages in flows of rhizomatic and intensive connections that occur from different parts of the research agencement in action, so that unexpected elements might emerge to become transformative forces in the analysis of the collected field materials (Coleman & Ringrose, 2013).



## Participants Recruitment

Twenty-one students attended this online graduate-level course the second time it was offered. At the session's end, after grade submissions, all 21 students were invited to participate in the research project, of which 8 students agreed to participate in this study.

## Collection of the Field Material

To provide a sense of their experiences with the online course, course material, participants' blog logs, and postings to the online forums, reflective multimedia collages and projects were gathered. Seven of the eight participants also agreed to take part in a semi-structured interview via Skype. The approximately 25-minute-long interviews took place at the end of the session, after the final grades were submitted. They were recorded and subsequently transcribed. The Deleuzo-Guattarian-inspired interview questions were designed to enable participants to share their experiences the teaching material, the technological tools used in the course, and the course assignments. The interviews also enabled students to talk about the ways their experiences in this course transformed their thinking about technology in language education (Appendix B). Moreover, as a researcher, I kept a journal on my experience while designing and teaching the course.

## Analysis of the Field Material

Rhizoanalysis (Masny, 2016) guided the analysis of the collected field material for this article. This analytical orientation to research does not seek to uncover the meaning of a phenomenon, but rather to think *in* the field material to map the connections occurring in the intangible. Accordingly, field materials are chosen not based on their representative capacity (i.e., actualizations), but according to their capacity "to act and intervene rather than be interpreted" (Colebrook, 2002, p. xiv). With the objective being experimentation, the researcher serves "as a mediator who works within the map so that it can continue to compose, associate and transform" (Nordstrom, 2015, p. 179). Hence, rhizoanalysis is a process of mapping that emerges from the researcher's own becoming. By emphasizing the unique moments in which intensive connections are made, the focus is no longer placed on identifying patterns across data, participants, and context, but rather on considering the transformative and creative capacity of singular and intensive moments and experiences. Nonetheless, when thinking *in* the field material, some patterns could emerge that might be considered for their transformative capacity. Hence, rhizoanalysis primarily involves asking questions to reconsider what else might be occurring and what else might be produced (Masny, 2016).

## Becoming Vignettes

When conducting a rhizoanalysis, instead of talking about data, we talk about "vignettes" which are sense making moments in a research agencement. Vignettes become analytical points of entry based on their capacity to transform a research agencement and to be transformed by this agencement (Masny, 2016). The following vignettes focus on the experiences of three participants: Morgan, John, and Carrie (all pseudonyms). Vignettes were selected from the participants' reflective collages based

on those vignettes' capacity to resonate with the researcher and thereby to stand out as "interesting, remarkable, or important" (Deleuze & Guattari, 1991/1994, p. 82) regarding the participants' becomings. The following vignettes' transformative passages are bolded to show when connections happened in my mind while intense streams of thought were being produced (Masny, 2016). As a rhizoanalysis focuses on the transformative capacities of singular moments rather than interpretations, readers are invited to consider the possibilities offered by the following data vignettes and think about what they might be capable of producing with/in the agencements of their own becomings.

## Findings

### Vignette 1: "Not the end of my TBIC journey"

The following vignette is associated with Morgan's multimedia collage, which caught my attention because it was very close to the visual expression of TBIC that was uploaded to the course platform. Morgan's collage actualized as a PowerPoint presentation, and the quasi-totality of the slides followed the same format as in Figure 3. With each slide, one could hear an audio recording that addressed an element of the participant's becoming in CALL.

**Figure 3**

*Morgan's Multimedia Collage*



As explained in her introductory slide, the various images were "placed randomly on the page with random connections, different shapes and various sizes of images that represent the different elements" that she experienced both during the course and through her own teacher becoming in

CALL. Elements that she discussed included material, human, social, linguistic, and technological elements as well as forces of destabilization and stabilization, as specified in the assignment instructions.

At the time of the research, Morgan was an English as a Second Language (ESL) teacher at a university. Prior to this position, she had spent four years teaching English Arts and ESL in South Korea, during which time she used technology daily to present content to students, manage the class, and conduct learning activities. She did not use technology as often in her Canadian classroom, mostly because the curriculum at her Canadian institution was more textbook-based. With/in the course, she selected the path of the regular course option. This is what Morgan said on the collage's last slide:

Overall, this collage expresses that my journey, my becoming in CALL **is made up of many elements and these elements will continue to be different over time as I move forward backward and around in my own becoming in CALL**. My own experience is **now something that I see** as dynamic, and moving, and growing, and as such I feel that **this collage highlights some of my own experiences that are probably quite unique and perhaps different from other educators who are learning to integrate technology**.

Thinking *in* the agencement of this expression of Morgan's becoming in CALL, it appears that when Morgan and the concept of TBIC collided, new understanding was produced regarding learning how to integrate technology. Moreover, it seems that pre-established desired outcomes materialized as Morgan expressed how her viewpoint changed and how her experience was henceforth perceived as dynamic and singular. As such, Morgan's becoming in CALL, as expressed in her collage, could be considered successful learning. However, TBIC reminds me that there is always more to reality than one perceives, which begs the question: What else might be occurring with/in this expression of Morgan's becoming in CALL? For instance, how might technology have amplified (or not) both (a) the capacity to transform and be transformed by TBIC, and (b) the capacity to learn to engage with change?

Throughout the course, students were encouraged to experiment with the expressive capacity of technology to explore other modes of expression besides text. I hoped that these expressive technological experimentations could serve as catalysts for more transformative experimentations with other ways of learning besides reproducing predetermined outcomes. I now realize that with/in Morgan's collage, TBIC was barely transformed, as the elements I used as examples to explain TBIC (Figure 3) were the same ones used with/in Morgan's collage to guide her own reflection. For instance, the example of interactions was provided by me to illustrate what could be a linguistic element at play with/in one's own TBIC, and Morgan also referred to interactions in her slide associated with linguistic elements. Still, thinking *in* the agencement of technology—TBIC—learning to engage with change, I now wonder about elements not actualized in the above vignette that might have amplified (or not) the capacity of technology to transform and be transformed.

One particular memory emerges in my mind: in her interview, Morgan expressed that she had struggled a bit with the concept of TBIC when she first came in contact with it, so to make sense of TBIC she tried to keep “a little journal or memo of things that were happening throughout the course”

or ideas she had. Thinking *in* the agencement of TBIC—struggle—sense—technology—learning to engage with change, I come to wonder if both technology’s and TBIC’s capacity to transform was dampened by struggle and sense in this case. Anything could have happened when these elements collided, but it appears that what was produced was the desire to use a journal. Now, I remember that the use of a journal was also recommended in the instructions provided to students. I also remember that desire is always associated with combinations of things. So, what other elements were at play with/in the desiring agencement of journal—sense—struggle—TBIC—technology—learning to engage with change? I now recall that in her interview, Morgan also expressed that having the option “to be creative was actually kind of nice and unique compared to some of the other stuff” she was doing online. Although Morgan enjoyed the creative freedom provided by the assignment, she only went a short way down that route, as she carefully ensured she followed the instructions to reproduce TBIC.

She also explained in her interview the reason why she enjoyed having this creative freedom:

As adult learners, sometimes our mindset is so focused on, like, am I going to do well? What about my mark? **I don’t want to do something and then it throws off or has this effect and I don’t do well in this course because I misinterpreted what was being asked of me.**

Was the fear of misinterpreting the instructions and getting a bad grade at play with/in the desiring agencement of journal—making sense—struggle—TBIC—technology—learning to engage with change—creativity? Did the workings of these elements reduce Morgan’s capacity to experiment with change and with what she might become? Was the fear of getting a bad grade a powerful validating force of reproduction with/in Morgan’s becoming in CALL?

In any case, it appears that providing students with the space to be creative might have slightly destabilized the reproductive power of her fear of getting a bad grade. Now I wonder: was Morgan’s statement on the last slide of her collage (Figure 3) *really* an expression of change with/in her capacity to develop new understandings about learning how to integrate technology, or her capacity to experiment with other ways of knowing, or her capacity to engage with change? Or was it simply an expression of her capacity to ensure she gets a good grade? Could I still consider Morgan’s learning a success? Here, I am reminded of the rhizomatic and intensive relationships at play between form and content, and I step away from binary thinking to embrace instead the multiplicity of potentials to become. As such, Morgan’s statement was an expression of neither failed nor successful learning; rather, it was simply what Morgan’s potential to transform became in the last slide of her PowerPoint—and of what this potential might become from that point forward.

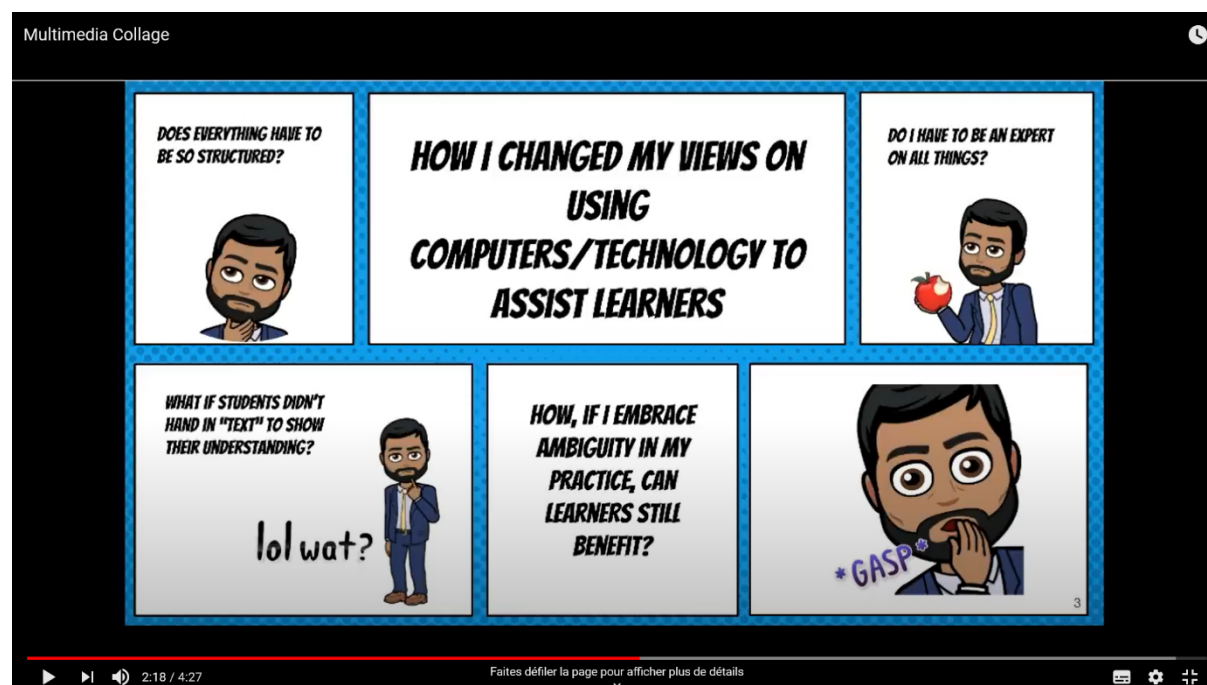
## **Vignette 2: “Does everything have to be structured?”**

Just like Morgan, John picked the regular course option and appreciated the creative freedom provided with/in the design of the multimedia collage. However, unlike Morgan, John’s collage materialized as a YouTube video, wherein TBIC transformed into the video *My Journey in CALL*. This video caught my attention because, apart from the introductory title, there was no other explicit reference to TBIC in John’s video, as illustrated in Figure 3. Instead of carefully following my

instructions, John tried “to take the ideas” that he had “learned in the course and apply them to this multimedia collage.”

**Figure 4**

*A Screenshot of John’s Video*



Prior to this course, John had worked as an English teacher in a secondary school classroom for 14 years. Following that, he became a resource teacher for instructional technology. At the time of this research, John was helping teachers of diverse disciplines within his school board to integrate technology into their classrooms. This is what John said in his video about what he learned in the course:

I feel like I know a lot about technology and how it can be integrated to help students learn. But I have also learned **a little bit throughout the course about what we can do, so that it’s not so text-heavy in terms of showing their understanding; and you will see in this collage, it is not a lot of text—it’s more showing emotions through emojis.** So, in terms of changing my views on using computers or technologies to assist learners, I thought about . . . I was challenged throughout the course to think about . . . **does everything have to be structured? Does it have to be a structured piece of writing, for example, with a thesis and supporting details? I also thought about doing: Do I have to be an expert on all things? Because there is so much technology that is out there that we can’t possibly know everything. Sometimes that makes teachers feel uncomfortable because it means that they may have to embrace ambiguity.**

This vignette brings forward thoughts of interwoven linguistic, technological, human, and social elements with/in John's becoming. Indeed, in this agencement, many elements seem to be interconnected, such as text—emojis—feeling uncomfortable—showing understanding—learning—structure—and . . .

I come then to wonder about the transformative capacity of emojis (as characteristics of technology) with/in the agencement of John's collage. More specifically, I wonder about the ways in which the elements of the above agencement may have amplified (or not) the emojis' capacity to transform and be transformed by learning to engage with change and language. Certainly, being able to experiment with other means of expression besides text seems to be a course element that resonated with John in particular ways, as it triggered thoughts associated with not only changing a practice, but also the power of structure, texts, and ambiguity with/in his profession. Could this also be a manifestation of a transformation of John's capacity to engage with change? Anything could have happened at this point, but it seems that the interworking of these elements contributed to the emergence of a desire to experiment with the expressive capacity of technology with/in his collage using emojis. Could emojis, then, be elements with/in John's becoming that amplified the capacity of technology to make John transform his thinking regarding the clarity of text with/in his own learning? Were text and clarity validating reproductive forces with/in John's becoming in CALL? Thinking back to the validating reproductive power of grading with/in Morgan's becoming, I wonder if this element was also at play in the virtual when John was thinking *in* the design of his collage.

At this point, a memory of John's interview emerges regarding something he said about his collage:

This allowed more freedom and more creativity, so I think that I appreciated it on a different level perhaps because **I know that I was one of the older students in the class, and I've been sort of removed from being a student in the . . . in, um, postsecondary for a little while, so I don't still have that same, you know, groove of, you know,** "We've got to do it this way. What do I have to do to just get a certain mark?" . . . **I'm more in it for my own learning . . . rather than just wanting to make sure that I get a degree. That's the big problem with a lot of our students—that drive for getting good grades rather than a drive for learning.**

It appears that the element of grades was also at play with/in John's becoming, but the drive for learning seems to have interfered with the validating reproductive power of getting good grades when both elements collided with John's age. We will never know what would have happened to John's becoming if these elements had not connected, but it appears that what was produced was an appreciation of creativity on a different level.

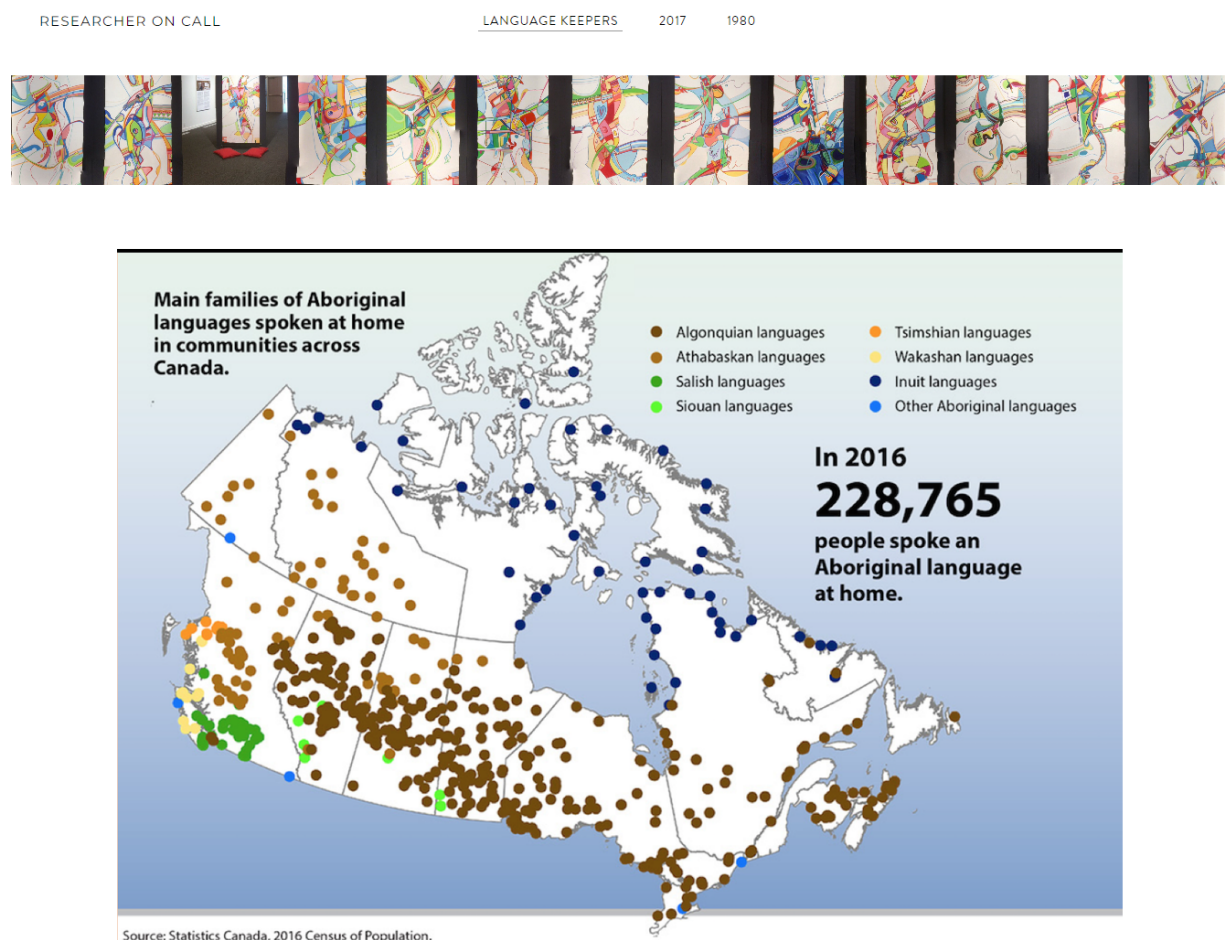
At this point, thoughts arise about another student—Carrie—who, like John, had been away from being a student for a long time, but who brought creativity to another level.

### Vignette 3: Researchers on CALL

The third vignette is associated with Carrie's multimedia collage, which caught my attention because, in my view, it was the one that expressed the most creativity that year. Carrie's multimedia collage materialized as a website.

**Figure 5**

*A Screenshot of Carrie's Website*



As she explained in the introductory text posted on the course website, she wanted to highlight three things that resonated with her “most deeply in this course.” She “intentionally sought, on three webpages, to give each topic very different treatment,” to push herself “creatively and take some technological risks.” Notably, Carrie was not a language teacher or a language teacher educator. In traditional research on CALL, data that is not associated with language teachers specifically may be considered irrelevant and may therefore be dismissed. However, TBIC reminds me that there is also transformative potential in difference. Hence, the following rhizoanalysis may open unexpected lines of thought and take the online course and TEDCALL down transformative paths not conceivable otherwise.



Carrie had been a journalist for most of her life and had also worked in developmental organizations. At the time of the study, she had been employed at the university full time for two years as a senior writer and editor. Her education up until then “was pretty language-y,” and she had become especially interested in the combination of language and technology. She chose the CSL option and was placed with the Institute of Canadian and Aboriginal Studies. Her assignment there was to produce a report on the ways in which technology could help revitalize aboriginal languages. This is what Carrie said in the introductory text of her collage shared with the other students on the associated website:

**Researcher on CALL:** I’m not a teacher, but after this course, **I do feel that I would like to continue researching in this field. In coming up with a subtitle for my website, I further tweaked “teacher becoming in CALL” by changing “in CALL” to “on CALL”** (by playful analogy with “Doctor on call,” though probably no lives will be saved as a result of my research). The overarching **concept behind the website is that I wanted to show rather than tell**—to demonstrate some of what I’ve learned by presenting what **the website of a “researcher on CALL”** might look like as they showcase their various research interests.

Interestingly, with/in Carrie’s collage, TBIC did transform into “researchers *on* CALL.” I slow down and think *in* the elements that contributed to the transformation of “Carrie, the Editor” into “Carrie, a researcher *on* CALL.” For instance, I consider the ways that the agencement of TBIC—the CSL project—desire to show rather than tell—Indigenous languages—learning to engage with change contributed to such a transformation. At this point, thoughts emerge in my mind regarding something Carrie said about another section of her collage:

**I also wanted to convey something of what I’ve learned about Indigenous languages, that they are place-based, polysynthetic—and poetic. Looking through CreeDictionary.com**, for example, I was struck by how many entries relate to the natural world and life outdoors, with words so packed with meaning that the English translations may use as many words as the Cree word has letters (in Roman orthography). **For example, nâtâhowew: “she goes toward people, swimming or paddling a canoe.” I felt an immediate affinity for that word** and felt it summed up my CSL experience nicely.

Evidently, Carrie’s “immediate affinity” with the Cree word *nâtâhowew* arose when she unexpectedly encountered thoughts of her CSL experience. Might this unexpected, intensive encounter have amplified the capacity of Indigenous languages to transform Carrie into a researcher *on* CALL?

To speed up Carrie’s becoming in CALL, I consider what her learning to engage with change *could* have looked like if she had been a teacher or had encountered other material and expressive elements besides the word *nâtâhowew*. I then think of her video collage which is situated on the 1980 page of her website. In her interview, Carrie explained that in that “retro” video, she wanted to:



try to include some *very latest* technology, **to play with the idea that modern tools can help us connect with our past**. For this, I dipped into Google's 3D Poly<sup>3</sup>, launched in November . . . But this is where **I found** the manual typewriter gif **that I use at the start of the video**. I had never worked with a gif before, **but knew that I had to try when I saw the Poly object that looks much like the portable Olivetti I had used to produce the long-ago master's thesis**.

In this video, many elements seem to be related: video—writing—her master's thesis—fun—past—modern tools. It appears that Carrie wanted to “play” with the connections between past and present in this video, using modern technology to “talk” about an experience with past technology. I am then led to wonder: could this be the manifestation of Carrie's potential to become regarding her capacity to engage with change? I then wonder about how other elements of this agencement could amplify this potential. For instance, I think *in* the ways that the thought of Carrie's old Olivetti portable typewriter emerged when she encountered the typewriter gif image, and the way these thoughts may have amplified the capacity of this image to transform Carrie's capacity to engage with change (and not just with reproduction). No one could have predicted this encounter, and we will never know what would have happened if this encounter had not occurred. Regardless, it looks like it did contribute to the emergence of her desire to work with such a gif and to experiment with change (i.e., changes in time) and with a new set of technological tools.

### Aperture

In response to research question 1, it appears that the agencements of students' reflective multimedia collages and this article, learning to engage with change and the concept of TBIC connected rhizomatically with multiple elements while participants were making sense of TBIC and the collage, and when I made sense of their experiences with/in the writing of this article agencement. Moreover, some elements, such as grades and assignment instructions, were active with/in different agencements—but never with the same capacity to change and be changed. For instance, the capacity of grades to change and be changed connected and materialized differently with/in Morgan's and John's agencements, in part due to the intensity of the connections at play with/in their respective agencements. Indeed, it seems that with/in John's agencement, the capacity of getting good grades to transform learning to engage with change was dampened by John's age and by his intense connections with emojis.

Thus, in response to question 2, it seems that the capacity of TBIC and learning to engage with change to transform and be transformed fluctuated with/in rhizomatic connections of resonance, amplification, dampening, and interference with diverse tangible (e.g., Indigenous languages), intangible (e.g., memories), material (e.g., typewriter), human (e.g., emotion), expressive (e.g., emojis), destabilizing (e.g., ambiguity), and stabilizing (e.g., structure) elements. Many elements became “other” with/in these sense-making rhizo-creative experimentations. For instance, TBIC became a

<sup>3</sup> 3D Poly was shut down in 2021. However, similar applications are currently available online.

journey and a researcher *on* CALL with/in John's and Carrie's collages, respectively. Learning to engage with change became a desire to follow instructions with/in Morgan's becoming; for John, it was a desire to experiment with ambiguity, structure, and language; and for Carrie, it was a video montage with/in a website.

In response to question 3, it seems that validation's transformative capacity also fluctuated with/in flows of rhizomatic connections associated with sense-making. For instance, with/in John's becoming, text became a validating element when it connected with the expressive structures of John's profession; however, its validating power diminished when it connected with the creative freedom at play with/in the expressive structures of the course.

This article put forward TBIC not to control, solve, or represent TEDCALL, but rather to experiment with the capacity of TEDCALL to become something different by creating a space propitious to the emergence of different ways to think and do TEDCALL. This is in line with current research in education and teacher education that explore and problematize the non-linear and complex processes associated with becoming a teacher. For instance, drawing from the concepts of assemblage, rhizome, and becoming, Strom and Martin (2017, 2022) have promoted non-linear ways of understanding the process of becoming a teacher as well as greater awareness of the agentic capacities of non-human elements in teacher education. In the same vein, Ovens et al. (2016) illustrated what can be produced when the Deleuzo-Guattarian concept of becoming is used to think differently the transition for student to teacher. Before them, Gale (2007) argued for "a careful and thorough re-thinking of the theory and practice of teacher education as a terrain of complexity, multiplicity and interconnectedness" (p. 472)—which is precisely what we intended to do with this article.

Hopefully, while making sense of it all, creative lines of thought will emerge that will lead teacher education, technology, language—and the reader—down transformative paths. One of these transformative paths might be associated with the destabilization of the power of reproduction with/in education and the associated research, as well as the way such destabilization might affect teachers' capacity to engage with ever-changing technological circumstances. Another path might be connected to the interworking of form and content in assessment, and to the ways these relationships might be transformed by experimenting with/in the creative and expressive potential of technology, language, and any other regime of signs.

As teacher educators and researchers, perhaps we could spend more time thinking with/in the possibilities offered by practices that take into consideration the transformative power of intensity in one's learning and in research. Regardless of what might become, it is important to remember that the point is not to say that patterns, models, codes, and standards are unimportant in teaching, learning, and research, but rather to say that it is equally essential to consider what these elements might be capable of *doing* and *becoming* when colliding with/in one's learning agencement, for we can never know how someone will learn.

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## Appendix A

*Instructions: Reflective Multimedia Collage (as published on the course platform)*

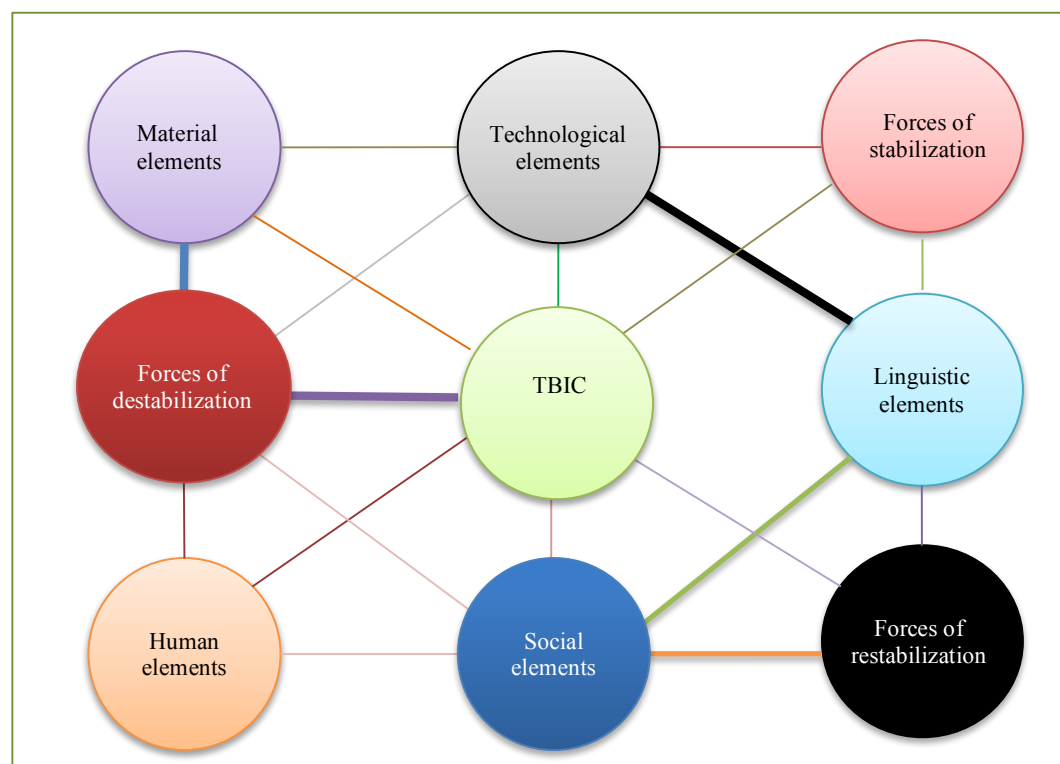
At this stage of the session you are in between two major movements—the official ending of this course and what might happen afterward. Such intermediate spaces are usually propitious to creativity. Therefore, the instructions for this task are purposefully broad to foster your creativity. So, your task in this module is to create individually a multimedia collage of your becoming in CALL throughout this session as a way to disturb current representations of the connections between technology, language, and education. You may also want to use one the following technological resources, or any other resources you may prefer.

- Padlet
- Popplet
- Weebly
- Thinglink
- Piktochart
- Voicethread

Please note: Your collage will be published on the website Disrupting Teacher Education in CALL<sup>4</sup>. If you do not want to be identified on the website, you may want to use an avatar or pseudonym.

### Do not forget:

“we never know in advance how someone will learn; by means of what loves someone becomes good at Latin, what encounters make them a philosopher, or in what dictionaries they learn to think” (Gilles Deleuze, 1968, p. 165). You may also want to use the visual concept of Teacher Becoming in CALL (TBIC) as explained in module 2 to guide your reflection.



<sup>4</sup> <https://www.bang-education.com/>

## Appendix B

### *Student Interview Guide (at the end of the session)*

1. Can you tell me about your academic background and your experience with technology, language, and teaching?
2. How do you feel about this course?
3. How did you respond to the teaching material in the course?
4. How did you respond to the technological tools in the course?
5. How did you approach the assignments?
6. How did your experience in this course affect the way that you think about technology, language, and education?
7. Is there anything else you would like to tell me about your experience in this course?

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